

A New Genus and Two New Species of Tenuialidae with Notes on the Family (Acari: Oribatei)¹

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Abstract: This article is the result of a continuation of research on the tenuialids by the authors. The descriptions of *Tenuiala crenulata*, n. sp., and *Tenuialoides medialis*, n. gen., n. sp., are accompanied by figures and a revised key to the known genera and species of the family. Comparative details of the tibia-tarsus are figured for *T. nuda*, *T. kurti*, *Hafenrefferia gilvipes* (Koch), and *Hafenrefferia nitidula* (Banks). New collection localities are also noted.

When we published our review (1955) this family consisted of three genera and four species. In a later article (1957) we added another genus and species described previously by Banks (1906) but revised by Jacot (1939). In this paper we describe a new genus and two new species and add comparative details of tarsal chaetotaxy of several known species. These details, not included in the original review and not available in the current literature, are added because of changes in terminology as well as other important alterations in the taxonomy of oribatids. The previously published key to the genera and species is revised and additional collection data are appended.

Genus *Tenuiala* Ewing, 1913

Tenuiala crenulata, n. sp.

(Figs. 1, 1A, 1B, 2, 5)

DIAGNOSIS. Lamellae broad, similar to other species in the genus, but lamellar cusps notched anteriorly, with two dentes; lamellar hairs inserted subterminally on dorsal surface of lamellae; translamella distinct, thick, heavier than in *T. nuda*. The specific name is indicative of the notched lamellae, a diagnostic feature of the species.

DESCRIPTION. Color reddish brown; broadly oval in shape; rostrum truncate anteriorly; rostral hairs curved, slightly setose, inserted about half their lengths posterior to tip of rostrum; prodorsum smooth; lamellae broad, width subequal throughout length, lamellar cusps narrowed anteriorly, notched at tip as in Figs. 1, 1A; lamellar hairs about as long as width of lamellae, slightly setose, inserted subterminally on dorsal surface of lamellae, closer to notch than to translamella, a sclerotized line extending posteromedial from setal insertions; translamella pronounced, heavily sclerotized, longer than width of a single lamella; interlamellar hairs setiform, about as long as inner margin of humeral process (pteromorph), projected forward over lamellae beyond tip of rostrum, inserted beneath margin of dorsosejugal suture; pseudostigmata as seen in Fig. 1B, inserted notches between humeral process and anterior margin of hysterosoma; sensilli about twice as long as lamellar hairs, slightly setose.

Hysterosoma broadly oval, glabrous (finely stippled when seen by negative phase contrast), humeral processes about as wide at bases as lamellae, extended forward about to level of tips of lamellar cusps, slightly decurved; dorsal setae as seen in Fig. 1.

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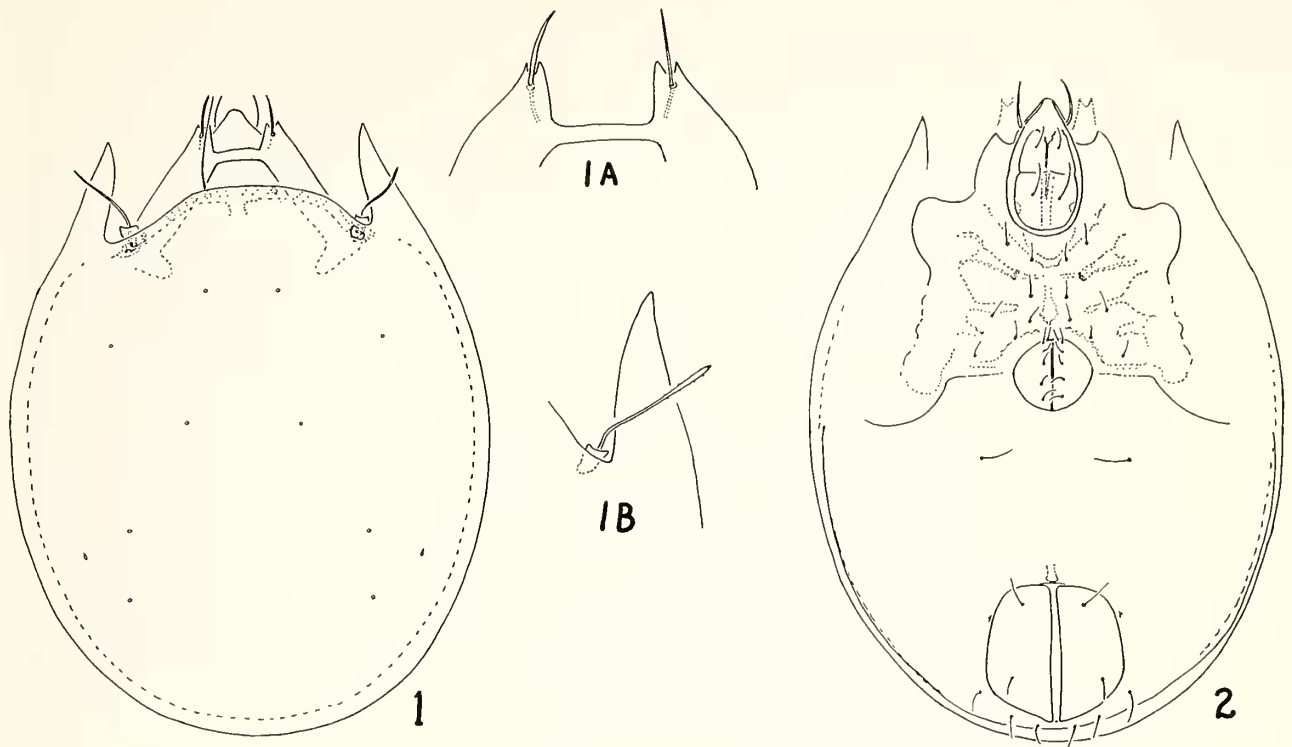


FIG. 1. *Tenuiala crenulata*, n. sp., from the dorsal aspect, legs omitted; A, lamellae. B, humeral process and sensillus enlarged.

FIG. 2. *Tenuiala crenulata*, n. sp., from the ventral aspect, legs omitted.

Camerostome elongated, infracapitulum as in Fig. 2; pedotecta I narrowed, with a lateral point, pedotecta II rounded; apodemata and ventral setae as seen in Fig. 2; genital aperture nearly round, about twice its length anterior to anal opening, enclosed in sclerotized ring formed from medial ends of apodemata IV; each genital cover with six setae (genital setae are numbered anterior to posterior) g : 1, g : 2 inserted in anterior margin of genital cover, g : 3, g : 4 closer together than g : 5, g : 6; aggenitals simple, inserted nearly twice their lengths from genital opening; anal opening about three times as large as genital, anal covers with two setae; *iad* close to anal opening, slightly posterior to level of a : 1, *ada* : 1, *ada* : 2 posterior to anal cover, *ada* : 3 at posterolateral corner of anal opening.

Legs heterotridactylous (Fig. 5).

LENGTH. 1,026 μ , propodosoma 126 μ ; width 738 μ .

Two specimens of this species were collected in Lebanon by K. A. Christensen, one at Wadi Jahhna, July 30–31, 1952, the other at Ainzahlta Cedars, November 23, 1952.

The type specimen, from Ainzahlta Cedars, is deposited in the USNM.

Tenuialoides n. gen.

DIAGNOSIS. Rostrum entire (not notched as in *Hafenrefferia gilvipes*); lamellar cusps elongated, with medial dens at tip, translamella distinct, about as long as length of lamellar cusps (compared to incomplete translamella of *Hafenrefferia nitidula*); humeral processes (pteromorphs) narrower than lamellae, much more spinelike than in *Tenuiala*, *Hafenrefferia*, *Hafenrefferia*, or *Hafenrefferiella*. Differences are also noticeable in the dorsal famulus-solenidion complex on tarsus I as seen in the comparative figures 5, 6, 7, 8, 9, 10.

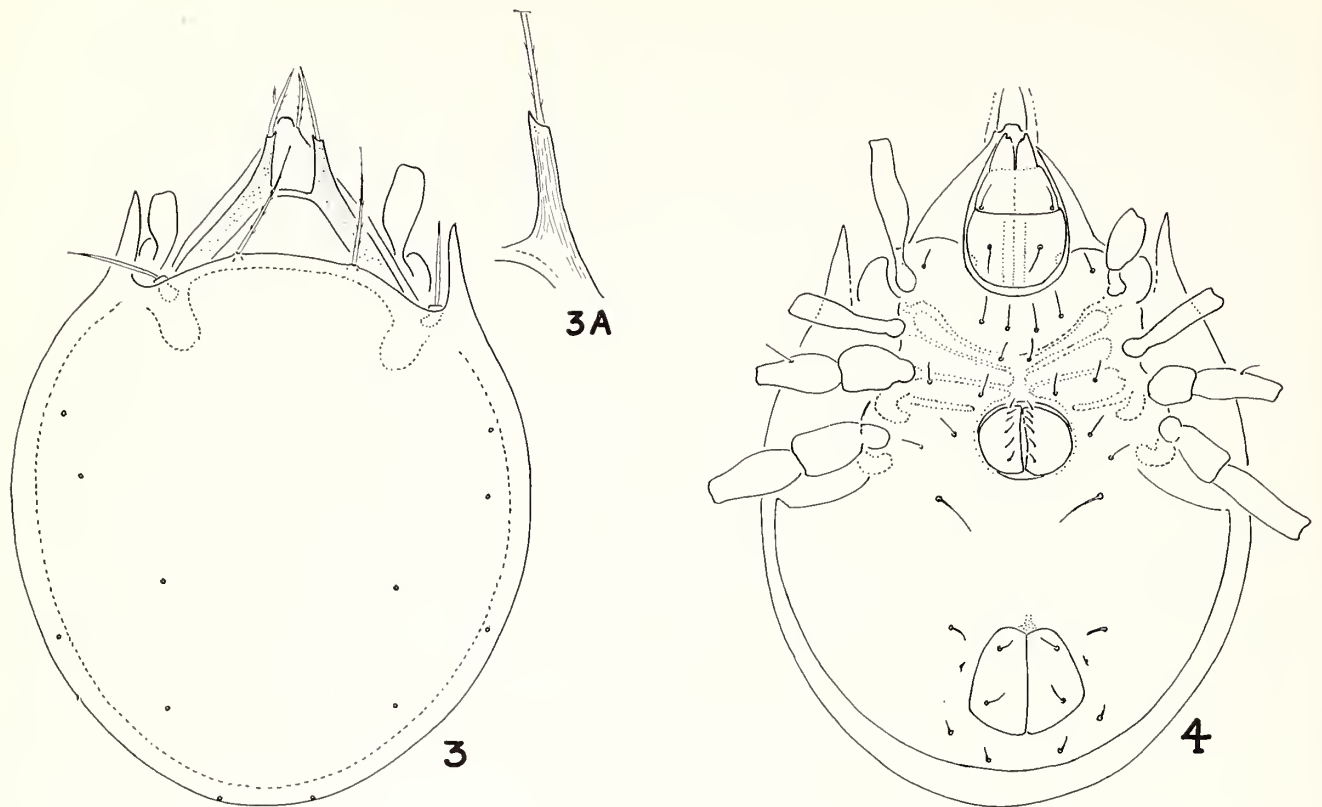


FIG. 3. *Tenuialoides medialis*, n. gen., n. sp., from the dorsal aspect, legs omitted; A, lamellar cusp showing medial dens and insertion of lamellar hair.

FIG. 4. *Tenuialoides medialis*, n. gen., n. sp., from the ventral aspect.

***Tenuialoides medialis* n. sp.**

(Figs. 3, 3A, 4, 6)

DIAGNOSIS. Lamellae narrow, with cusps that project nearly to tip of rostrum, each with small medial dens (Fig. 3A); lamellar hairs as long as cusps, setose, inserted in distal tips of lamella; translamella about as long as length of cusp; interlamellar hairs about as long as lamellae, robust, setose, inserted in anterior edge of dorsosejugal suture; sensillus with narrow, uniform width except at pointed tip, slightly barbed; humeral processes (pteromorphs) narrower than in *Tenuiala*; notogaster rounded.

DESCRIPTION. Color dark brown, nearly black, generally rotund in appearance; prodorsum broadly triangular, glabrous; rostrum truncate anteriorly, rostral hairs curved, robust, setose, not as long as lamellar hairs, inserted in slight prominences at lateral margins of rostrum just behind anterior tip; lamellae narrow, about same width as base of humeral process, with fine lines on surface (Figs. 3, 3A), narrowed into forward-projecting cusps, cusps extend nearly to tip of rostrum, each cusp with a median dens (Fig. 3A); lamellar hairs robust, about as long as lamellar cusp, setose mainly along medial edge, inserted terminally in cusp; translamella distinct, about as long as length of lamellar cusp, width nearly equal to base of interlamellar hair; interlamellar hairs as long as length of lamellae from translamella to pseudostigmata, robust, setose, erect, inserted in anterior margin of dorsosejugal suture; pseudostigmata cornuate, projected slightly beyond anterior margin of notogaster; sensillus narrow and slightly longer than lamellar cusp, smooth, projected laterally above humeral process; anterior margin of pedotectum I rounded, visible between prodorsum and humeral process.

Hysterosoma nearly circular in outline except for forward-projecting humeral processes (pteromorphs); six pairs of notogastral setae as in Fig. 3.

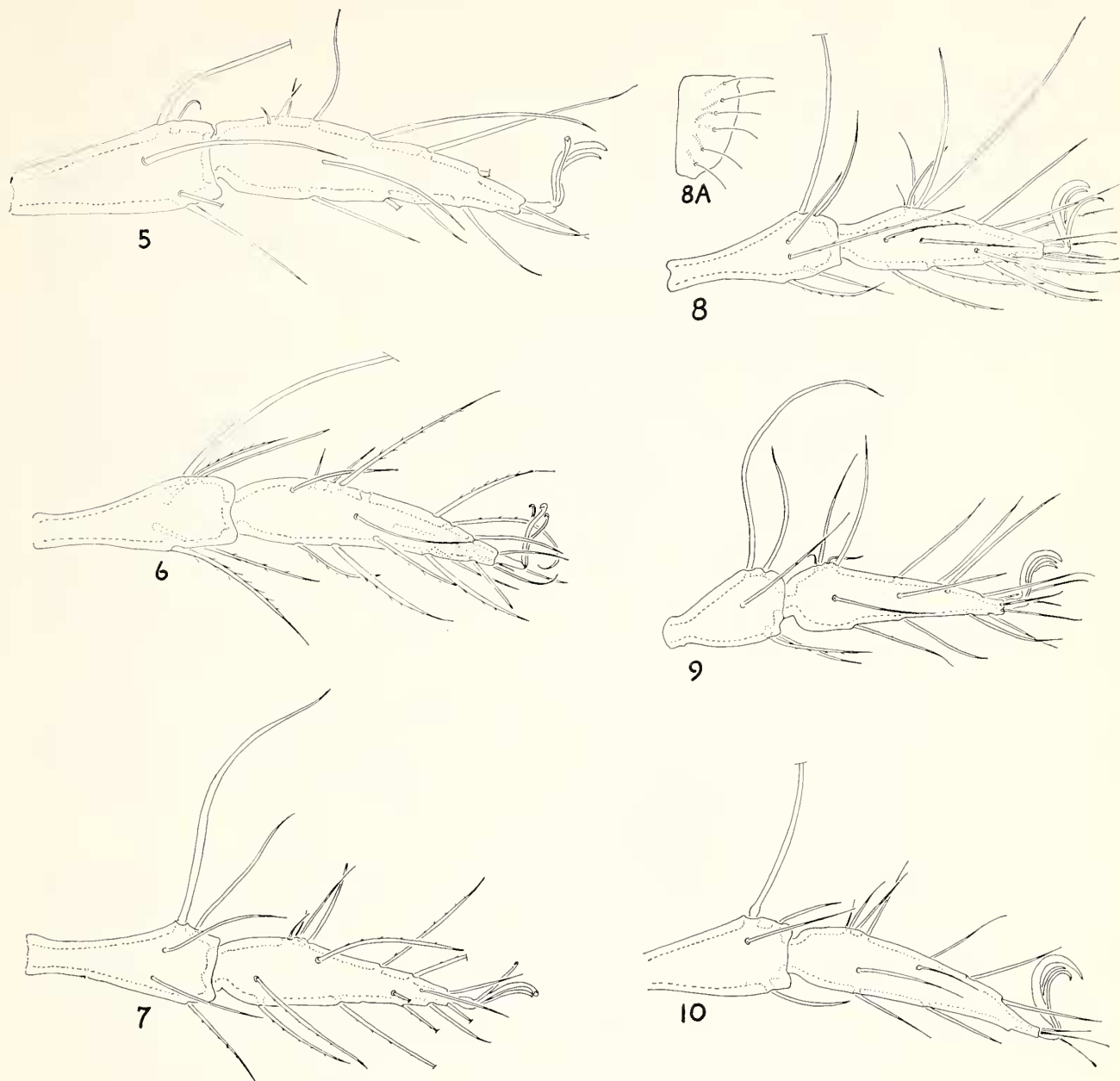


FIG. 5. Tibia-tarsus I of *Tenuiala crenulata*, n. sp.

FIG. 6. Tibia-tarsus I of *Tenuialoides medialis*, n. gen., n. sp.

FIG. 7. Tibia-tarsus I of *Hafenrefferia gilvipes* (Koch).

FIG. 8. Tibia-tarsus I of *Hafenrefferia nitidula* (Banks); A, dissected genital cover showing genital setae.

FIG. 9. Tibia-tarsus I of *Tenuiala nuda* Ewing.

FIG. 10. Tibia-tarsus I of *Tenuiala kurti* Woolley and Higgins.

Infracapitulum and camerostome as in Fig. 4; apodemata I and II narrowed, partly joined medially to coxisternal complex, apodemata III narrowed, extending to sclerotized anterior margin of genital aperture, medial tip of apodemata IV slightly remote from genital aperture; genital opening rounded, with sclerotized perigenital ring; each genital cover with six setae, g : 1, 2, 3, 4 inserted about equidistant from each other, g : 5, 6 more widely spaced; aggenital setae simple, longer than other ventral setae inserted about their lengths postero-laterad of genital opening; anal aperture trapezoidal, nearly twice its length from genital opening, each anal cover with two simple setae; three pairs of adanal setae, as seen in Fig. 4; *iad* fissure close to anal aperture, between *ada* : 1 and *ada* : 2.

Legs robust, heterotridactylous; tarsus I as seen in Fig. 6.

It appears that the dorsal complex of setae described for *Tenuiala* has its counterpart in **Tenuialoides medialis**, although the type has some of these setae missing.

LENGTH. 864 μ ; width: 648 μ .

Two specimens of this species were collected in North Carolina. The type was taken 7 miles from Highlands Biological Station, Jackson County, N. C., July 5, 1961 by S. and D. Mulaik. A paratype was collected at Highlands, N. C., June 21, 1957, by S. and D. Mulaik.

The type specimen is deposited in the USNM.

DISCUSSION

The new genus **Tenuialoides** appears to be somewhat intermediate between *Hafenferrefia* and *Tenuiala*. This relationship is inferred from several features. The humeral processes (pteromorphs) are narrower than *Tenuiala* and *Hafenferrefia*, but the elongated lamellar cusps of **Tenuialoides** resemble the similar, but shorter, structures in *Hafenferrefia*. A complete translamella is distinctive for **Tenuialoides** contrasting to the incomplete translamella in *Hafenferrefia*. In **Tenuialoides** the barbed setae of tarsus I resemble more closely those of *Hafenferrefia*, especially the dorsal famulus-solenidion complex (Figs. 6, 8). *Tenuiala* has smooth setae and a strikingly different dorsal complex of tarsal setae (see Figs. 6, 9, 10). The figures of the tibia-tarsus I of the various species are drawn to the same scale to show comparative relationships.

Key to the Genera and Species of Tenuialidae revised from Woolley and Higgins (1955) and Higgins and Woolley (1957)

1. Lamellae with narrow or pointed cusps usually not extending beyond rostrum; with or without a translamella 4
Lamellae broad, of about equal width throughout length; cusps wide, usually extending beyond rostrum; lamellar hairs inserted subterminally; with or without a translamella Genus *Tenuiala* Ewing, 1913 2
2. Lamellae joined medially by a distinct translamella 3
Lamellae joined medially, but without a translamella *T. kurti* Woolley and Higgins, 1955
3. Translamella thin, lamellar cusps notched laterally; interlamellar hairs not reaching tip of lamellar cusp *T. nuda* Ewing, 1913
Translamella thick, lamellar cusps notched terminally; interlamellar hairs long, extending beyond rostrum *T. crenulata*, n. sp. (Figs. 1, 2)
4. With an incomplete or complete translamella; lamellar cusps narrowed; lamellar hairs inserted terminally in cusps 5
Without a translamella; lamellar cusps pointed; lamellar hairs inserted subterminally and laterally; humeral processes (pteromorphs) slightly sclerotized along proximal half of medial margin *Hafenferrefiella nevesi* Sellnick, 1952
5. Translamella incomplete, cuspal dens lateral; humeral processes (pteromorphs) wider than lamellae *Hafenferrefia nitidula* (Banks), 1906
Translamella complete; cuspal dens medial; humeral processes (pteromorphs) narrower than lamellae **Tenuialoides medialis**, n. gen., n. sp., (Figs. 3, 3A, 4)

Further collecting and comparison of specimens have disclosed that several species of Tenuialidae, such as *Tenuiala nuda*, *Hafenferrefia nitidula*, are found in the same general habitats. The delineation of the microhabitats involved will result from further, more

precise ecological studies, but the following new records show common macrohabitats for different species within the family.

Tenuiala nuda Ewing, 1913, p. 133

CALIFORNIA: Eleven specimens, 4 miles W Ft. Dick, Del Norte Co., June 8, 1962, C. W. O'Brien; Ave. of the Giants, Humboldt State Park, August 3, 1962, T. A. Woolley.

COLORADO: One specimen, San Juan Mountains, Slumgullion Pass, Hinsdale, July 6, 1959, H. and L. Levi; six specimens, Elk Mts., Copper Creek Valley, Gunnison Co., August 7, 1956, H. and L. Levi; five specimens, 24 miles SE Gunnison, Cochetope Creek, Saguache Co., June 27, 1960, H. Levi.

OREGON: Two specimens, Waldport, February 7, 1960, G. W. Krantz; one specimen, Myrtle Creek, August 2, 1962, T. A. Woolley.

WASHINGTON: Eight specimens, Seattle, June 7, 1962, rotten logs under mixed forest, H. and M. Higgins.

Hafenrefferia nitidula (Banks) 1906, p. 491

CALIFORNIA: Nine specimens, 4 miles W Ft. Dick, Del Norte Co., June 8, 1962, C. W. O'Brien.

OREGON: Four specimens, Waldport, February 7, 1960, G. W. Krantz.

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